IN THE DRAWINGS

Applicant hereby requests the Examiner's approval of the following proposed changes to FIGS. 1, 2, 4, 5 and 7 of the above-identified application:

Specifically, FIGs. 1, 2, 4 and 5 have been amended to include descriptive legends for the boxes, FIG. 2 has been amended to correct a draftsperson error to correct "0.10M" to read - - OADM- -, and FIG 7 has been amended to correct the legend components as noted in the Action.

An indication of the Examiner's approval of the foregoing proposed changes is respectfully requested in the next Patent Office communication.

REMARKS

Claims 1-4 are pending in this application. Claims 1, 3 and 4 are independent.

Objections to the drawings

Figures 1, 2, 4 and 5 were objected to in paragraph 1 of the Action on the ground that descriptive legends were needed for various boxes. Figure 7 was objected to in paragraph 2 on the ground that various legends were incorrectly labeled. The proposed drawing corrections are believed to address each of these inadvertent draftsperson errors. Replacement sheets incorporating these changes are attached hereto. Withdrawal of the objections to the drawings is respectfully requested.

Section 112, first paragraph rejections

Claims 1-2 were rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Action notes in paragraph 4 that:

> ..."the limitation 'at least one optical WDM interface optically coupled to a first of the WDM output ports, said optical WDM interface being adapted to receive, at different times, a transponder and a transmission link through which a WDM signal can be communicated' in lines 11-14 of the claim...[t]he WDM interface corresponds to the general-purpose optical interface (GPOI) mentioned in paragraph [0027] of instant specification... [h]owever, the specification does not describe the GPOI in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make the GPOI".

Applicants respectfully submit that the "general purpose optical interface (GPOI)" mentioned in paragraph [0027] is only one particular embodiment of a WDM interface (recited in Claim 1). In addition, Applicants further submit that the WDM interface is, as described in the specification, a mechanical/physical element that is "used to receive" or "hold" a transponder or an additional transmission fiber (or "an interface through which an additional transmission span may be situated"). The requirements of the claimed "WDM interface" are fully described in Applicants' specification, as filed, in a functional manner. Given the two requirements specifically set out in the specification (i.e, that it is "used to receive a transponder or an interface through which an additional transmission span may be located"), one of ordinary skill in the art would certainly recognize how to make and use the system according to Claim 1 in a very straightforward manner.

Applicants therefore submit that the specification includes a "description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same".

The rejection further takes the position that:

> "Claim 2 recites the limitation 'said transponder is adapted to receive multiple wavelength components from the second WDM output port'...[h]owever, the specification does not describe a transponder that operates with a multiple wavelength components in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention".

Applicants respectfully submit that those skilled in the art would appreciate that a transponder may operate with multiple wavelength signals. Applicants direct the Examiner at least to paragraph [0026] which notes that "an arrangement of reconfigurable optical switches such as depicted in FIG. 4 is employed in copending U.S. Patent Appl. Serial No. [PH-01-00-04C] to provide a protection scheme in the event of a transponder (i.e., a transmitter/receiver pair in which optical signals originates as, or terminates in, an electrical signal) failure". The "optical signals" of course may be multiple wavelength signals.

In order to eliminate any issues, paragraph [0007] of the specification has been amended herein to provide support for the exact language recited in Claim 2. Reconsideration and withdrawal of the Section 112, first paragraph rejections, are respectfully requested.

Section 112, second paragraph rejections

Claims 1-2 were also rejected under 35 USC 112, second paragraph, as indefinite. Specifically the Action notes in paragraph 6 that "the limitation 'a transponder and transmission link' in line 13 of the claim and the limitation 'at least one transponder' in line 15 of the claim" renders it "unclear whether these transponders are the same transponder or different transponders". The recitation in Claim 2 of "said transponder" causes similar ambiguity. Each of Claims 1 and 2 has been carefully reviewed and amended, as believed necessary, to overcome the issues raised. Reconsideration and withdrawal of the Section 112, second paragraph rejection are respectfully requested.

Section 102(e) rejection

Claims 1-4 were rejected under 35 U.S.C. 102(e) as being anticipated by Sharratt et al. (US 2001/0040710 A1). This rejection is respectfully traversed in light of the above claim amendments and the following discussion, and reconsideration is requested.

As described in paragraph [0018] of Applicants' specification, interconnecting ring networks with all-optical reconfigurable switches (1) allows the switches to add or drop any combination of multiple channels onto its WDM ports, and, (2) the switches can individually route the wavelength components between its WDM ports. By using a series of connected reconfigurable optical switches in comparison to OADMs, a central office node can be interconnected with other network arrangements so that it serves as more than simply an access point for adding and dropping traffic.

One particular arrangement of reconfigurable optical switches, illustrated in FIG. 5 of Applicants' disclosure, employs four switches and six sets of transponder pairs, where the transponders in each pair communicate with different switches, such that an individual transponder in each pair can serve as a backup for the other in case of a failure (see paragraph [0026]).

As described in paragraph [0027], the slots in which the transponder pairs are located, may be replaced with a "general purpose optical interface (GPOI) that can be used...either to (1) receive transponders, as in FIG. 5, or (2) as an interface through which an additional transmission span may be situated, as in FIG. 4". A "GPOI in accordance with the present invention is initially built into the network so that it can be used for *both optical service termination at a transponder*, or, *for transparent routing of an optical service to another physical location or network*". The "present invention leverages the different types of flexibility of the optical switch to simultaneously supply the benefits of plug and play transponder interface connection with an optical interface that can extend the reach of an optical service beyond the immediate vicinity of the optical note".

Independent Claim 1, as amended herein, is directed to a node, in a WDM optical communication system that includes a plurality of nodes interconnected by communication links, the node including an optical coupling arrangement having at least one input port for receiving a WDM signal and a plurality of output ports for selectively receiving one or more wavelength components of the WDM optical signal, the arrangement being adaptable to reconfigure its operational state to:

(i) selectively direct any one of the wavelength components received on the input port to any of the output ports *independently of any other of the wavelength components*, and

(ii) selectively direct any combination of *two or more of the wavelength components* from the input port to at least two of the output ports that serve as WDM output ports.

The system further includes at least one optical WDM interface optically coupled to a first of the WDM output ports, the optical WDM interface being adapted to receive, at different times, a first transponder and a transmission link through which a WDM signal can be communicated, and, at least one second transponder coupled to a second of the WDM output ports.

Independent Claim 3 is directed to an interconnection device for communicating in an all-optical manner a WDM signal between at least first and second WDM optical communication systems that each include a plurality of nodes interconnected by communication links, the interconnection device including a plurality of optical coupling arrangements each operatively associated with a different one of the communications systems for directing *in an optically transparent manner* wavelength components between the nodes in their respective communication systems, each of the optical coupling arrangements including: at least one first port for receiving a WDM optical signal from one of the communication systems and a plurality of second ports for selectively receiving any two or more wavelength components of the optical signal, at least one of the optical coupling arrangements being adaptable to route *in an optically transparent manner* every wavelength component between the at least one first input port and the plurality of second ports independently of every other wavelength component, and an optical waveguide supporting at least two wavelength components and coupling a second output of the first optical coupling arrangement to a second output of the second coupling arrangement.

Independent Claim 4 is directed to a method of routing three or more wavelength components of a WDM optical signal within a first communication system and between a first communication system and a second communication system, the first communication system including a first node having *a first optical path* therethrough for transporting wavelengths components to other nodes *in the first communication system* and a *second optical path* therethrough for transporting wavelength components *to the second communication system*, the method comprising the steps of routing in an *optically transparent manner* any combination of one or more wavelength components through the first optical path of the first node and routing in an *optically transparent manner* over a single optical waveguide any combination of two or more remaining wavelengths components over the second optical path between the first node of the first communication system and a node of the second communication system.

The Action simply directs Applicants to FIGs 1, 2, 6, 7 and 8, and to paragraphs [0121] and [0122] of the Sharratt publication for the alleged teachings of all of Applicants' Claims 1-4.

With respect to independent Claim 1, Applicants respectfully submit that the Office Action fails to provide a showing that Sharratt somehow provides the requisite teaching of an optical coupling arrangement...that is adaptable to reconfigure its operational state to:

> (i) selectively direct any one of the wavelength components received on the input port to any of the output ports *independently of any other of the wavelength components*, and
>
> (ii) selectively direct any combination of *two or more of the wavelength components* from the input port to at least two of the output ports that serve as WDM output ports.

Sharratt is simply directed to an optical communication system including interconnected optical waveguide rings, "in which radiation modulated with communication traffic propagates" (Abst). FIG. 6 and FIG. 7 are directed to a "type of optical interface connecting two communication rings of the system" ([0058] and [0059]). FIG. 8 of Sharratt is an illustration of "wavelength switching performed around channel control units of an interface of the system shown in FIG.1 ([0060]). Sharratt notes in paragraph [0131] that "the transponder 1332 shown in FIG. 6...or alternatively the transponder 1410 shown in FIG. 7...can be included within the interface 70 illustrated in FIG. 1 to provide a modified interface...1500 in FIG. 8...interface

1500 not only provides a high degree of reconfigurable channel connection control but also enables communication traffic to be switched between channels to ensure that the system 10 is operating optimally to circumvent grossly unequal distribution of traffic between available channels".

Applicants submit that the switches shown in Sharratt are merely analogous to the OXC 340 optical cross-connect shown in FIG. 3 and discussed in Applicants' Background of the Invention. As noted in paragraph [0006] of Applicants' specification, Applicants appreciated that it would "be desirable to develop a multi-wavelength optical network interface that provides *optically transparent signal routing between rings or* networks, thereby avoiding the need for a separate OXC network element....".

Applicants submit that the optical interfaces described in Sharratt may provide a limited degree of reconfigurability, but there is no indication that Sharratt can selectively direct any one of the wavelength components received on the input port to any of the output ports *independently of any other of the wavelength components*, and selectively direct any combination of *two or more of the wavelength components* from the input port to at least two of the output ports that serve as WDM output ports.

The exemplary reconfigurable all-optical switch illustrated in FIG. 7 (and para's [0018]-[0021], at least) of Applicants' specification, provides the flexibility and functionality needed to provide an optical coupling arrangement that is adaptable to reconfigure its operational state to:

(i) selectively direct any one of the wavelength components received on the input port to any of the output ports *independently of any other of the wavelength components*, and

(ii) selectively direct any combination of *two or more of the wavelength components* from the input port to at least two of the output ports that serve as WDM output ports.

In addition, Applicants submit that the ability to provide an optical coupling arrangement that can selectively direct wavelength components in the manners noted above (see (i) and (ii)), allows the node to include an optical WDM interface that is adapted to receive, at different times, (1) a transponder and (2) a transmission link through which a WDM signal can be communicated. Again, Sharratt fails to provide such teaching.

For at least the foregoing reasons, independent Claim 1 is believed patentable over Sharratt.

Each of independent Claims 3 and 4 recite that the optical coupling arrangements route in an "optically transparent manner". The optical coupling arrangements noted in the Action include transponders 1200 and 1400, and do not route wavelength components in an optically transparent manner. In addition, Claim 4 recites (1) routing in an *optically transparent manner* any combination of one or more wavelength components through the first optical path of the first node and (2) routing in an *optically transparent manner* over a single optical waveguide any combination of two or more remaining wavelengths components over the second optical path between the first node of the first communication system and a node of the second communication system. Sharratt also fails to teach or suggest routing, in an optically transparent manner, wavelength components through the first optical path of the first node.

Accordingly, since there is no showing in the Action that Sharratt teaches or suggests an optical coupling arrangement or interconnection device/method having the functionality set forth in Claim 1, 3 or 4, Applicants respectfully submit that these claims patentable over Sharratt.

Dependent Claim 2 is believed to be clearly patentable for all of the reasons indicated above with respect to Claim 1 from it depends, and even further define over Sharratt by reciting additional distinguishing limitations.

Since the Applicants have fully responded to the rejections set out in the Office Action, it is respectfully submitted that in regard to the above remarks that the pending application is in condition for allowance and prompt review and issuance is accordingly requested. Should the Examiner be of the view that an interview would expedite consideration of this Amendment or of the application at large, request is made that the Examiner telephone the Applicants' undersigned attorney at (908) 518-7700 in order that any outstanding issues be resolved.

Respectfully submitted,

3/9/06
Date

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